STUDY TITLE
Rationale and Determination of an Acceptable Baseline
Residue Level Following Aerial Pesticide Applications

REGULATION
North Carolina Administrative Code Subchapter 9L
Pesticide Section
Section .1000 Aerial Application of Pesticides
.1005 Restricted Areas

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RATIONALE AND DETERMINATION OF AN ACCEPTABLE BASELINE RESIDUE LEVEL FOLLOWING AERIAL PESTICIDE APPLICATIONS

INTRODUCTION

North Carolina currently enforces regulations that prohibit the off-site drift of aerially applied pesticides within certain restricted areas. These restricted areas are specified in the North Carolina Administrative Code Subchapter 9L, Pesticide Section; Section .1000, Aerial Application of Pesticides; Subsection 0.1005 Restricted Areas. Within the Restricted Areas subsection the following areas are effectively prohibited from having any pesticide residue:

- (b) No pesticide shall be deposited by aircraft within 300 feet of the premises of schools, hospitals, nursing homes, churches, or any building (other that a residence) which is used for business or social activities if either the premises or the building is occupied by people.
- (c) No pesticide shall be deposited by aircraft on the right-of-way of a public road or within 25 feet of the road, whichever is the greater distance.
- (e) No pesticide shall be deposited within 100 feet of any residence.

These three sections differ from sections (d) and (f) of the Restricted Areas subsection in that the latter establish harmful or adverse effects as the criteria rather than a prohibition of pesticide deposition at any level. This zero-residue policy is impractical due to analytical chemistry techniques that have evolved to permit the detection of residues at part per billion levels or lower. Residues of pesticides at the ppb level are to be expected off site, even following a perfect application. This acknowledgment has been incorporated into the code of regulations governing pesticide applications in California (Attachment 1). The weakness of the zero-residue policy is that it is not health based and deems unacceptable residue levels that are of no recognized health consequence to the public. Further, it effectively prevents applicators from complying with North Carolina pesticide regulations when applying <u>any</u> pesticide (organic or synthetic) by aerial application.

The purpose of this position paper is to develop and propose pesticide residue levels that would not present health hazards to the public and therefore would be protective of the public health while permitting acceptable detectable off-site residues that are a normal consequence of agricultural pesticide application. Nothing in this paper proposes that aerial applicators be relieved of any responsibility in complying with North Carolina or Federal pesticide regulations. Under 40 Code of Federal Regulations Part 156.206, General Statements, (a) Application restrictions; all pesticides covered by the Worker Protection Standards prohibit the application of a "product in a way that will contact workers or other persons, either directly or through drift." This prohibition is intended to prohibit any exposure during the application by the dermal, inhalation, or oral route of exposure to any individual not involved in the pesticide application. Postapplication dietary exposures that may result from deposition of drift onto edible crops (commercial or residential) are covered by tolerances established by the U.S. EPA. In addition,

nothing in this paper suggests that aerial applicators not be held to a higher standard than other pesticide applicators because of the increased risks associated with flying. Rather, this paper does propose revisions in the N.C. Pesticide Regulations that replace obsolete and impractical restrictions on drift residue with more realistic health-based restrictions for residues resulting from aerial application.

FOLIAR RESIDUE EXPOSURE ASSESSMENT METHODOLOGY

Methodology to determine the potential exposure and resultant risk from pesticide residues following foliar applications has developed over the past several decades. This methodology has been cited in various regulatory guidance documents published by the U.S. EPA, Health Canada, and the OECD (Organization for Economic Cooperation and Development) and other state governments e.g., Cal/EPA's Department of Pesticide Regulation.

The EPA uses a concept known as the transfer coefficient (TC) to numerically represent the post-application exposures one would receive contacting foliage treated with pesticides. The TC value is typically expressed as cm^2/hr and represents the surface area contacted by an individual per hour of contact. The TC concept has been established in the scientific literature and through the EPA monitoring guidelines (Series 875 - Occupational and Residential Exposure Test Guidelines, Group B - Post Application Exposure Monitoring Test Guidelines). The TC values are defined by calculating the ratio of a measured exposure for a given task or activity to the amount of pesticide measured on leaves or other surfaces that can rub off on the skin resulting in an exposure. For post-application exposures, the amounts that can rub off on the skin are measured using techniques that specifically determine the amount of residues on treated leaves or other surfaces. These residues are known as transferable residues or dislodgeable foliar residues (DFRs). Transferable residues differ from total residues contained on both the surface and absorbed into treated leaves or other surfaces.
TCs can be illustrated by the following example. Consider two vegetable fields where the amount of chemical on treated leaf surfaces that can rub off on the skin is the same. One field has been treated with Chemical A while the other field has been treated with Chemical B in a similar manner. If an individual harvests the same vegetables for a day in each field, the exposures the individual would receive would be similar. The TC would also be similar for each field and chemical because the ratio of exposure to residue would be the same. If the same individual would do another activity in those fields such as scout the vegetables for pests or tie the vegetables, the exposures would be different, as would the resulting TC. This is because each activity is different in the amount of contact with the treated foliage that is produced in conducting each activity.

Because the TC is independent of the pesticide applied and reflects the nature of the contact activity with the treated foliage, the TC concept can be applied to the estimation of exposure to off-site residues of aerially applied pesticides. The Agency has developed a series of TCs that are unique for various job activities and crop types. These TCs are used by the EPA for risk assessment and are amenable for the determination of off-site

residue levels that would be acceptable in developing a risk based residue action level. EPA Office of Pesticide Programs Policy 3.1 is the policy that has established the TCs used for post-application risk assessment.

By using the foliar residue levels expressed in μg of residue per square centimeter of leaf surface ($\mu g/cm^2$), the transfer coefficient (cm^2/hr), duration of exposure in hours, and the individual's body weight, one can calculate the exposure (μg/kg body weight/day). The exposure is compared to an appropriate toxicity endpoint to determine the relative risk that results from the exposure. The toxicity endpoint used in risk assessment is the No Observed Effect Level or NOEL. The NOEL is a dose level administered in a toxicity study that did not produce any observed effects in the test animals. A higher dose level in the study produced observed effects and is called the LOEL or Lowest Observed Effects Level. The comparison of the NOEL to the exposure is called the Margin of Exposure or MOE. The typical MOE required by EPA to demonstrate acceptable exposure is a MOE of 100 or larger. A MOE of 100 indicates that the exposure is 100 times less than a dose level that produced no observed effects in animals. The equations that are typically used are as follows:

1. Daily Exposure
 Foliar Residue ($\mu g/cm^2$) x TC (cm^2/hr) x Time (hrs/day) ÷ B.W. (kg) = Exp. (μg/kg/day)

2. Relative Risk or MOE
MOE = NOEL (μg/kg/day) ÷ Exposure (μg/kg/day)

EPA POLICY 3.1

EPA Policy 3.1 (7 August 2000) establishes TCs for use in post application exposure assessments and describes the general methodology used in their development. The Agency has grouped potential post-application exposure into 18 groups based on crop type. Within each crop type there are activity patterns based on cultural practices expected for the different crop groupings. For example, berries are an example of a crop grouping and represent a low height crop. Activity patterns within the berry grouping include hand harvesting with a TC of 1,500 cm^2/hr, and scouting with a TC of 400 cm^2/hr. Another example is Field/Row Crops such as cotton, peanuts, and beans which represent low and medium height crops. The TCs for this crop grouping range from a high of 2,500 cm^2/hr for hand harvesting green peas to a low of 100 cm^2/hr for scouting, thinning, and hand weeding. For turf and sod the Agency has developed a TC of 500 cm^2/hr for activities such scouting or mowing.

To determine the appropriate TC for use in establishing an appropriate health-based foliar residue level for North Carolina, one must determine the likely exposure scenario the public would contact with off-site residues. The concern for likely exposure will most likely be expected on adjoining rights-of-way, public areas, or residential areas. The contact is then most likely with foliage of low height and unlikely to exceed knee height. Turf is a likely candidate. The activities most likely to occur would be transient and

involve walking through the area or non-intensive hand contact. It is unlikely that heavy activities analogous to harvesting would occur in public rights-of-way, public areas, or residential areas.

The Agency has selected TCs ranging from 100 cm^2/hr to 500 cm^2/hr for the berry, low and medium field crop, turf/sod, root vegetable, curcurbit, fruiting vegetable, leafy vegetable, stem/stalk vegetable, and vine/trellis groupings for low contact activities. For the purpose of establishing a residue action level for off-site residues, a TC of 500 cm^2/hr is proposed.

TOXICITY ENDPOINT SELECTION

The selection of the most appropriate toxicity endpoint is critical to a health based decision process. Toxicity can potentially result from short-term exposures or long-term exposures that are repeated over time. For the purpose of assessing the potential public health risk resulting from exposure to off-site pesticide residues involving an aerial application, the exposure potential of interest is short-term. Typically the exposure duration will be less than one hour.

The route of exposure is also important in conducting the risk assessment. Exposure can occur from oral ingestion, dermal contact, or inhalation of spray particles or vapours. In regards to potential contact with residues on off-site foliage the primary route of exposure is dermal. The TCs used by the Agency are based on dermal exposure.

The organophosphate insecticides are expected to have the lowest dermal NOELs. Insecticides are designed to kill insects rather than plants or fungi as herbicides or fungicides are. This class of compounds typically has the greatest mammalian short-term toxicity.

In addition, the toxicity endpoint for the organophosphate insecticides is based on acetylcholinesterase enzyme inhibition rather than more significant adverse toxicity effects such as cellular changes in kidney, liver or brain.

Table 1 presents the dermal NOELs selected by EPA in conducting the risk assessments for 14 organophosphate insecticides. Typically these studies are 21-day or 28-day repeat dermal dose studies to rats or rabbits. Because of the cumulative nature of cholinesterase inhibition from repeated exposures, the NOELs from these multi-day dosing studies will overestimate the toxicological potential of these pesticides following a short-term exposure of less than one day duration. For comparative purposes the dermal NOELs of seven herbicides and fungicides are also presented in Table 1.

Table 1. Comparative Organophosphate Insecticide, Herbicide, and Fungicide Dermal Toxicity NOELs

Organophosphate NOELs (mg/kg/day)		Herbicide/Fungicide NOELs (mg/kg/day)	
Acephate	12	Bromoxynil	1000
Azinphos-Methyl	0.75	Chlorothalonil	600
Chlorpyrifos	5.0	Dacthal	> 1000
Coumaphos	0.5	Diquat	20
Diazinon	1.0	Glyphosate	1000
Dimethoate	10	Paraquat*	1.15
Disulfoton	0.4	Pendimethalin	> 1000
Malathion	50		
Methamidophos	0.75		
Methidathion	0.2		
Naled	1.0		
Oxydemeton Methyl	5.0		
Profenofos	1.0		
Tribufos (DEF)	0.67		

*Paraquat NOEL based on corrosivity of the paraquat cation and not on systemic toxicity.

Based on these dermal NOELs it is suggested that two benchmark toxicity endpoints can be selected for determining a critical off-site residue level. A NOEL of 0.1 mg/kg/day is recommended following insecticide applications and a NOEL of 10 mg/kg/day is recommended following herbicide, fungicide, plant growth regulator, and biological pesticide applications such as Bt. Paraquat represents a separate circumstance because of the irritant effects of the formulation and a NOEL of 1.0 mg/kg/day is proposed for paraquat. It should be further understood that the establishment of a dermal exposure health-based residue level for human contact with herbicide residues does not impact the possibility of adverse foliar damage occurring at lower residue levels that do not present a human health concern.

CALCULATION OF OFF-SITE RESIDUE ACTION LEVELS

As previously discussed, a 100-fold uncertainty factor is applied to NOELs in conducting a risk assessment. The implication of this practice is that the acceptable exposure level is 100 times lower than the dose level that produce no observed effects in the toxicology studies. Applying this factor to the proposed toxicity endpoints yields acceptable exposure levels of 0.001 mg/kg/day or 1 µg/kg/day for insecticides, 0.01 mg/kg/day or 10 µg/kg/day for paraquat, and 0.1 mg/kg/day or 100 µg/kg/day for the other classes of pesticides.

ADULTS IN RESIDENTIAL AND COMMERCIAL SETTINGS

The foliar residue levels that should not be exceeded can be calculated by applying the 500 cm^2/hr transfer coefficient to represent the most likely contact scenarios with off-site

residues, a 70-kg body weight for adults, and assuming that typical contact will be short-term and unlikely to exceed one hour.

The daily exposure calculation can be rearranged to solve for the foliar residue level. The equation is presented and solved as follows:

Foliar Residue ($\mu g/cm^2$) = Exp. ($\mu g/kg/day$) x B.W. (kg) $\div$ Time (hrs/day) $\div$ TC (cm^2/hr)

Insecticides
1 $\mu g/kg/day$ x 70 kg $\div$ 500 cm^2/hr $\div$ 1 hr/day = 0.14 $\mu g/cm^2$

Paraquat
10 $\mu g/kg/day$ x 70 kg $\div$ 500 cm^2/hr $\div$ 1 hr/day = 1.4 $\mu g/cm^2$

Herbicides, Fungicides, Plant Growth Regulators, Biopesticides
100 $\mu g/kg/day$ x 70 kg $\div$ 500 cm^2/hr $\div$ 1 hr/day = 14 $\mu g/cm^2$

The foliar residue levels used in risk assessments have been traditionally presented as $\mu g/cm^2$ of foliage sampled. Sampling methodology used by the North Carolina Department of Agriculture expresses the residues in parts per million (ppm) or μg of residue per gram of foliage. Therefore a unit conversion from leaf weight to surface area must be employed.

The California Department of Pesticide Regulation (DPR) Worker Health and Safety Branch has developed a conversion factor for the ratio of plant leaf surface area to weight (Dong, M., et.al. 1992 Determination of Crop-Specific Parameters Used in Foliar Mass to Area Conversion: I. For Selected Varieties of Grapes. *Bull Environ Contam Toxicol* 46:542-549). The purpose of the DPR study was to derive a mathematical formula relating leaf weight to area. Grapes were the first crop selected and discussed in the referenced work. The statistical analysis of linear regression of leaf area in cm^2 to leaf weight in grams had a y-intercept of ln 4.752 for combined grape varieties. The y-intercept is achieved with a leaf weight of 1 gram (ln 1 = 0). The natural antilog of 4.752 is 115.8 cm^2. Therefore, the conversion factor between 1 ppm or 1 $\mu g/gram$ leaf weight is 116 and 1 ppm is equivalent to 1 μg of residue/116 cm^2. This is equivalent to 1 ppm = 0.0086 $\mu g/cm^2$ of leaf surface area.

There is uncertainty in extrapolating from the grape leaf weight to surface area ratio to other types of foliage. The ppm methodology however measures total plant residue rather than just the dislodgeable residue available to produce exposure and the use of the ppm methodology to determine residues will overestimate the exposure potential.

The health based DFR level for insecticides was 0.14 $\mu g/cm^2$. Using the conversion factor of 0.0086 $\mu g/cm^2$ = 1 ppm, the DFR of 0.14 $\mu g/cm^2$ is equivalent to 16 ppm. The health based DFR level of 1.4 $\mu g/cm^2$ for paraquat is equivalent to 160 ppm. The health based DFR level of 14 $\mu g/cm^2$ for herbicides and other non-insecticides is equivalent to 1600 ppm.

CHILDREN IN RESIDENTIAL SETTINGS

It is recognized that children represent a unique subpopulation that requires additional considerations. In a residential setting where children may be playing on the lawn a more intensive contact can occur. Also toddlers exhibit mouthing behaviors that can produce incidental oral ingestion that is not typical in older children or adults.

Dermal Exposure
The transfer coefficients in Policy 3.1 do not specifically address this type of activity. The U.S. EPA has established a children's transfer coefficient for residential lawn activities in its Residential Standard Operating Procedures. This TC is 5,200 cm^2/hr and accounts for intense activity on the turf. The TC also assumes no clothing because of the methodology used to measure the exposure. The turf residue methodology used to develop the TC is different than the DFR methodology and a different set of calculations are necessary to calculate a residential turf ppm action level. The TC for residential turf was developed using concurrent dermal exposure monitoring with a standardized Jazzercise routine and turf transferable residue monitoring in which a roller is rolled over a cloth dosimeter placed on the turf. The weight of the roller is intended to represent the pressure that a child will exert on the grass.

For the insecticides the 1 µg/kg exposure level remains. However, the representative bodyweight of a toddler is 15 kg compared to the 70 kg adult bodyweight. The critical turf residue level measured on the cloth dosimeter is calculated as follows:

Dosimeter Residue Level
1 µg/kg/day x 15 kg ÷ 5,200 cm^2/hr ÷ 1 hr/day = 0.0029 µg/cm^2

The EPA has evaluated data relating the transfer of pesticide residue from turf to the cloth dosimeters. This evaluation has led the Agency to establish a default turf transferable residue value of 5%. The Agency has concluded that in the absence of data that 5% of initially deposited residues are transferred to human skin through contact with pesticide-treated surfaces. This value assumes that 5% of the initially deposited residue on the turf would come into contact with the skin. Using the EPA 5% transfer value permits the calculation of turf residues that would result in a dermal exposure of 0.0029 µg/cm^2. This calculation is expressed as follows:

Turf Residue Level
0.0029 µg/cm^2 ÷ 5% = 0.058 µg/cm^2

The last step in determining a critical residential turf residue level for insecticides is the use of the conversion factor of 0.0086 µg/cm^2 = 1 ppm. Using this conversion factor, the turf residue level of 0.058 µg/cm^2 is equivalent to 6.7 ppm.

The establishment of a dermal health based residue level for paraquat and herbicides (except paraquat), fungicides, plant growth regulators, and biopesticides would be similar

except that the acceptable exposure levels are 10 µg/kg/day for paraquat and 100 µg/kg/day for the other classes. This would result in residential turf health based residue levels of 67 ppm and 670 ppm, respectively.

Hand to Mouth Oral Exposure
Oral exposure resulting from hand to mouth activity among young children is a complex issue because this exposure is not necessarily additive with the toxicity endpoint of concern resulting from dermal exposure. In addition, the oral toxicity NOEL is likely to be different from the dermal toxicity NOEL.

The cholinesterase endpoints selected for hand to mouth activities were obtained from the EPA risk assessments and were preferably based on red blood cell cholinesterase inhibition from acute neurotoxicity studies in rats. However, not all compounds had acute neurotoxicity studies and in such cases the NOELs were based on other short-term oral toxicity studies selected by the Agency. Table 2 provides a comparison of the dermal and oral short-term NOELs for cholinesterase inhibition.

Table 2. Comparative Organophosphate Insecticide Short-Term Dermal and Oral Cholinesterase Toxicity NOELs

Dermal NOELs (mg/kg/day)		Oral NOELs (mg/kg/day)	
Acephate	12	Acephate	2.5
Azinphos-Methyl	0.75	Azinphos-Methyl	1.0 (LOEL)
Chlorpyrifos	5.0	Chlorpyrifos	0.5
Coumaphos	0.5	Coumaphos	2.0 (LOEL)
Diazinon	1.0	Diazinon	0.25
Dimethoate	10	Dimethoate	No data
Disulfoton	0.4	Disulfoton	0.25
Malathion	50	Malathion	500
Methamidophos	0.75	Methamidophos	0.3
Methidathion	0.2	Methidathion	0.2
Naled	1.0	Naled	1.0
Oxydemeton Methyl	5.0	Oxydemeton Methyl	2.5
Profenofos	1.0	Profenofos	0.5
Tribufos (DEF)	0.67	Tribufos (DEF)	1.0

The lowest measured NOEL was 0.20 mg/kg/day, however two products had no only LOELs measured based on cholinesterase inhibition at the lowest dose test. Using the EPA default of assuming the NOEL can be ten times lower then the LOEL would produce an estimated NOEL of 0.10 mg/kg/day based on azinphos-methyl.

The NOEL of 0.1 mg/kg/day with an uncertainty factor of 100 yields an acceptable oral dose of 0.001 mg/kg/day or 1 µg/kg/day for cholinesterase inhibition. For a 15 kg toddler this translates to a dose of 15 µg/day.

The Agency has established default guidance in the Residential Standard Operating Procedures for the estimation of oral exposure resulting from hand to mouth activity.

The exposure is based on the insertion of 20 cm^2 of hand surface area during each of 20 contacts per hour. During a 1-hour period a cumulative surface area of 400 cm^2/hr is inserted into the mouth. The transfer of pesticide residue from the hand to the mouth is assumed to be 100%. Based on an acceptable ingestion of 15 μg/day and this resulting from the contact with 400 cm^2 of hand area, the concentration on the hand is calculated as follows:

Acceptable Hand Pesticide Concentration
1 μg/kg/day x 15 kg ÷ 400 cm^2/hr x 1 hr/day = 0.0375 μg/cm^2

The estimation of the residue concentration on the grass necessary to produce a hand concentration of 0.0375 μg/cm^2 is calculated the same as for dermal exposure. Those calculations are as follows:

Turf Residue Level
0.0375 μg/cm^2 ÷ 5% = 0.75 μg/cm^2

The last step in determining a critical residential turf residue level for insecticides is the use of the conversion factor of 0.0086 μg/cm^2 = 1 ppm. Using this conversion factor, the turf residue level of 0.75 μg/cm^2 is equivalent to 87 ppm.

Because the toxicity endpoint for the organophosphates is the same for the dermal and oral route, the effect of dermal and oral ingestion exposure is aggregated. The aggregate ppm on the turf is calculated using an inverse reciprocal equation of the individual ppm's as per EPA guidance (Whalen and Pettigrew, U.S. EPA, 1997, 1999). The calculation is presented as follows:

$$\frac{1}{(1/6.7) + (1/87)} = 6.2$$

The combined dermal and hand to mouth exposure ppm level on turf for the organophosphates is 6.2 ppm.

Addressing the potential aggregate exposure for other classes of pesticides becomes complex because the oral and dermal toxicity endpoints can potentially be different which precludes aggregation of the dermal-based turf ppm level and an oral based turf ppm level. It is therefore recommended that for residential areas that the 6 ppm level be used for all classes of pesticides because of the unique nature of this setting.

CONCLUSION

Current North Carolina agricultural regulations consider any detectable levels of aerially applied pesticides off-site to be unacceptable in certain restricted areas. With the sensitivity of modern analytical chemistry techniques any investigation of an aerial

application will find detectable residue levels if they are looked for regardless of the perfection of the application.

An alternative approach has been developed that sets maximum allowed off-site pesticide residues based on the health risk potentials of the different classes of pesticides. Using accepted EPA methodology and toxicity endpoints permits the development of health-based maximum allowed residue levels that account for the potential toxicity of the pesticides, potential off-site exposure, and uncertainty factors to provide additional protection to the public.

The establishment of health-based residue levels on the restricted property areas accounts for human-based activity on the restricted properties. To meet these requirements the applicator will have to account for the drift deposition so as not to exceed the maximum residue levels. This effectively establishes a buffer zone beyond the property determined by the applicator that accounts for application-specific conditions and replaces the current rigid 300-foot buffer zone. Based on this approach it is proposed that .1005 Restricted Areas be revised by adopting the following off-site pesticide residue levels as an enforcement standard for aerial application of pesticides in North Carolina. Parts (a), (d), and (f) pertain to application to congested areas, aquatic effects, and nontarget environmental effects and are unchanged.

(a) No pesticide shall be applied by aircraft with the limits of any congested area except when permission is granted under F.A.R.-137.

(b) On the property of nursing homes, or any building (other than a residence, school, or church) which is used for business or social activities if either the property or the building is occupied by people the residue level of an insecticide shall not exceed 16 ppm, the residue level of paraquat shall not exceed 160 ppm, and the residue level of all herbicides (except paraquat) and other classes of pesticides shall not exceed 1600 ppm.

(c) On the right-of-way of a public road or within 25 feet of the road, whichever is the greater distance, the residue level of an insecticide shall not exceed 16 ppm, the residue level of paraquat shall not exceed 160 ppm, and the residue level of all herbicides (except paraquat) and other classes of pesticides shall not exceed 1600 ppm.

(d) No pesticide labelled as toxic or harmful to aquatic life shall be deposited in or near any body of water in such a manner as to be hazardous to aquatic life unless such aquatic life is the intended target of the pesticide.

(e) On the property of any residence, school, hospital, church, or established recreational area the residue level of any pesticide shall not exceed 6 ppm.

(f) No pesticide shall be deposited onto any nontarget area in such a manner that it is more likely than not that adverse effect will occur.

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ATTACHMENT 1
CALIFORNIA TITLE 3
PESTICIDES AND PEST CONTROL OPERATIONS

The following are excerpts from California Title 3 Pesticides and Pest Control Operations (April 1998) that are pertinent to the issues discussed in this paper.

Section 6614. Protection of Persons, Animals, and Property

      (a) An applicator prior to and while applying a pesticide shall evaluate the equipment to be used, meteorological conditions, the property to be treated, and surrounding properties to determine the likelihood of harm or damage.

      (b) Notwithstanding that substantial drift would be prevented, no pesticide application shall be made or continued when:

      (1) There is a reasonable possibility of contamination of the bodies or clothing of persons not involved in the application process;

      (2) There is a reasonable possibility of damage to nontarget crops, animals, or other public or private property; or

      (3) There is a reasonable possibility of contamination of nontarget public or private property, including the creation of a health hazard, preventing normal use of such property. In determining a health hazard, the amount and toxicity of the pesticide, the type and uses of the property and related factors shall be considered.

NOTE: Authority cited: Sections 12976 and 12981, Food and Agriculture Code.

CALIFORNIA FOOD AND AGRICULTURE CODE
ARTICLE 10. RECOMMENDATIONS AND USAGE

Section 12972. The use of any pesticide by any person shall be in such a manner as to prevent substantial drift to nontarget areas.